



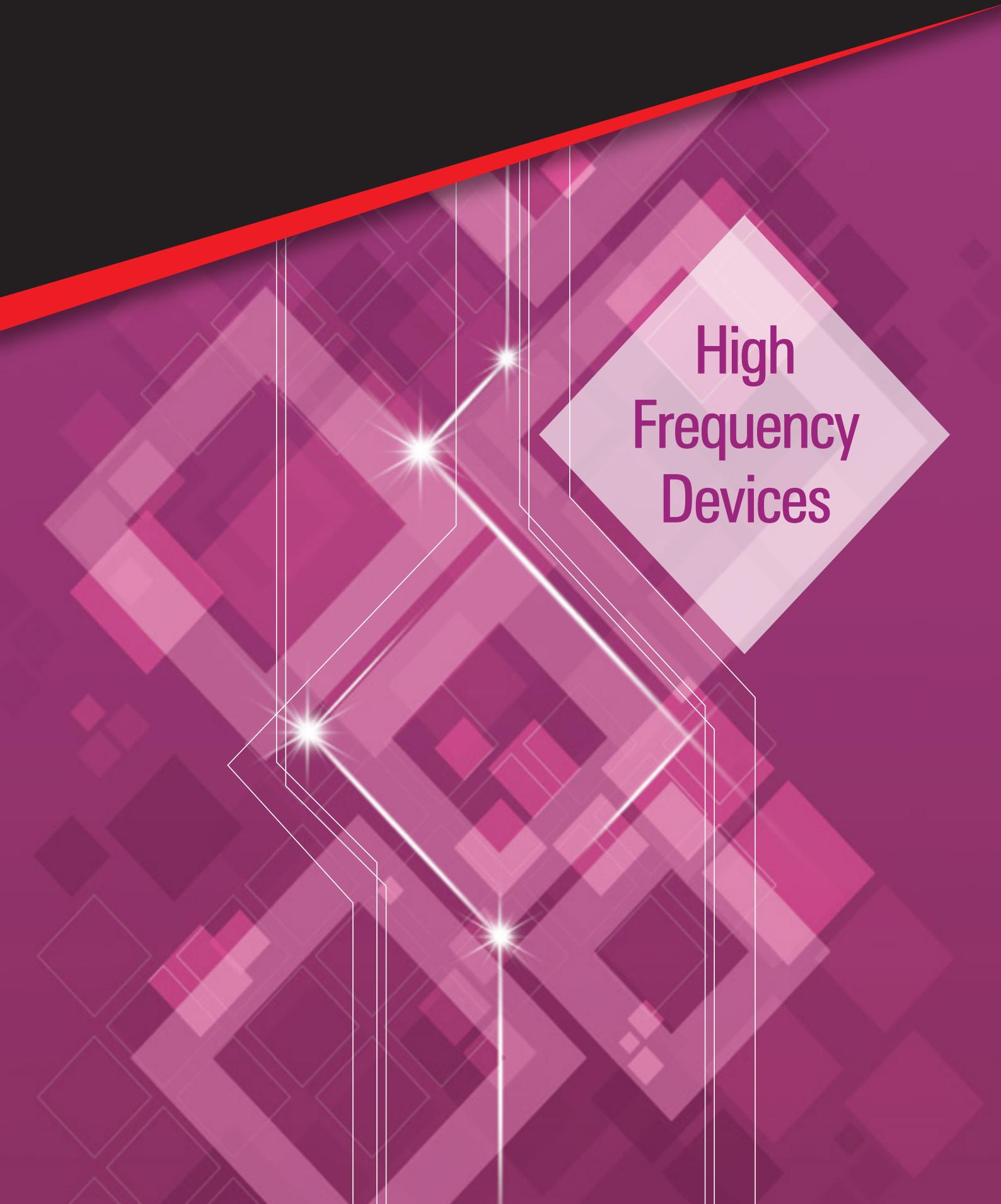
MITSUBISHI
ELECTRIC

Changes for the Better

for a greener tomorrow



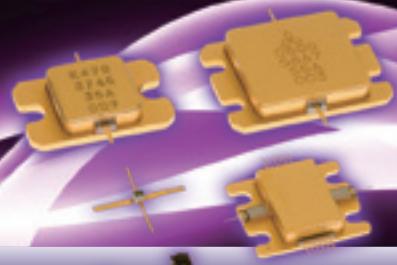
HIGH FREQUENCY DEVICES



High
Frequency
Devices

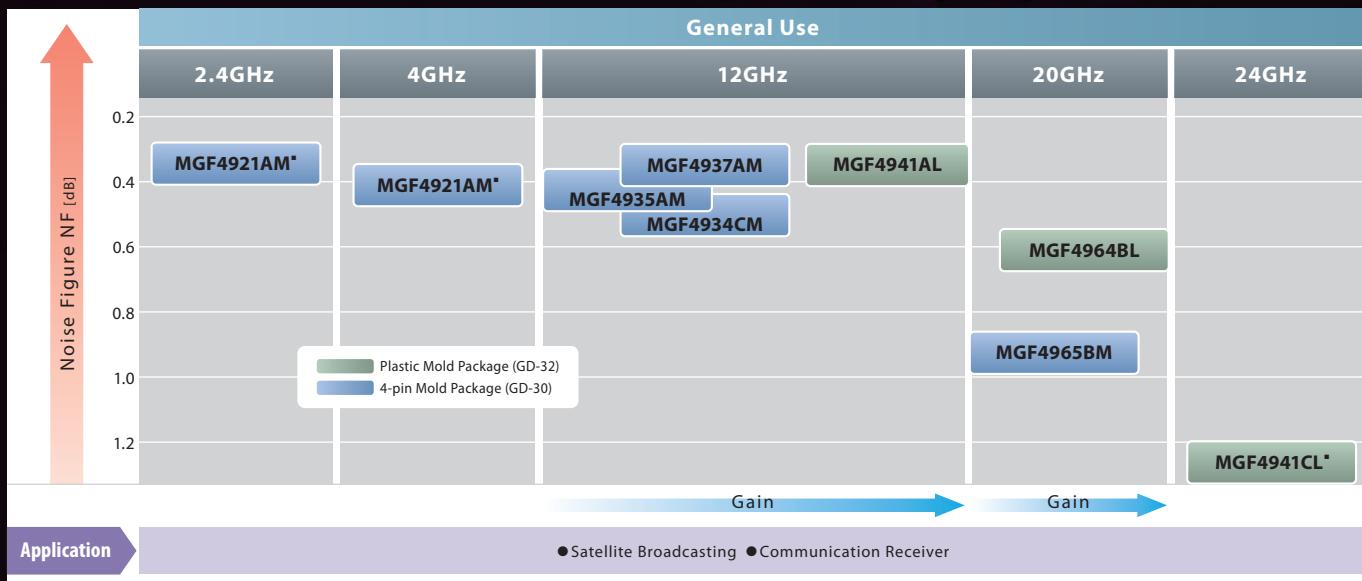
The Best Solution for Realizing the Information and Communication Era

Communication networks, such as high speed Internet, and high-speed data communication, are developing rapidly. We are ready to offer the best solution to the systems for realizing the information and communication era by providing of the GaN/GaAs products.



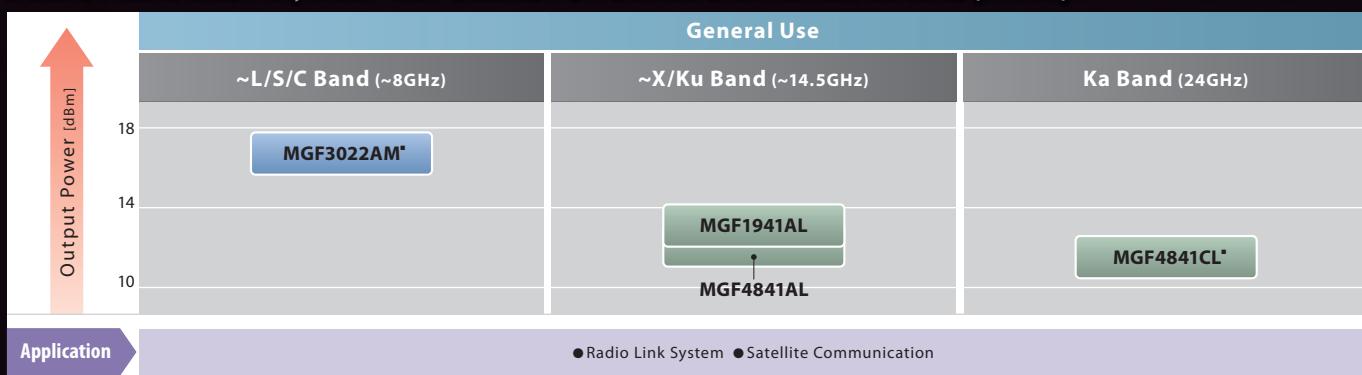
SELECTION MAP

GaAs HEMT SERIES FOR MICROWAVE-BAND LOW-NOISE AMPLIFIERS (Discrete)



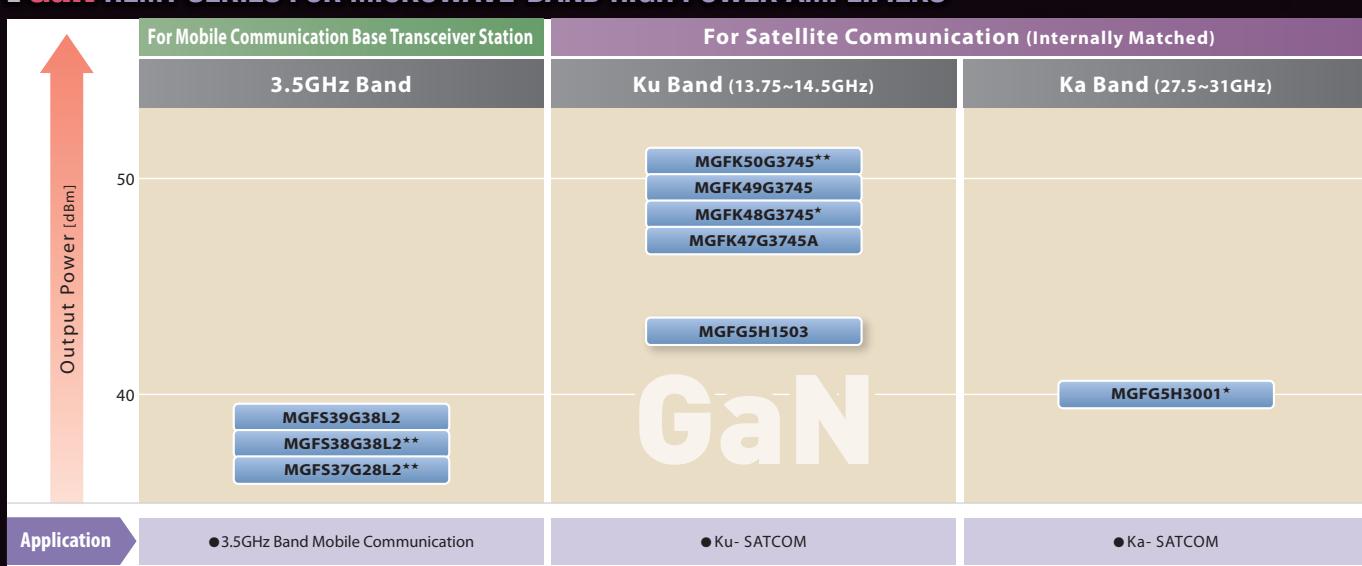
■: AEC-Q101 qualified FET: Field Effect Transistor HEMT: High Electron Mobility Transistor HBT: Heterojunction Bipolar Transistor

GaAs HEMT/MES FET, InGaP HBT SERIES FOR SMALL SIGNAL AMPLIFIERS (Discrete)



■: AEC-Q101 qualified

GaN HEMT SERIES FOR MICROWAVE-BAND HIGH POWER AMPLIFIERS



*: New Product **: Under Development

Partially supported by Japan's New Energy and Industrial Technology Development Organization(NEDO).

PRODUCT LIST



GaAs HEMT SERIES FOR MICROWAVE-BAND LOW-NOISE AMPLIFIERS (Discrete)

Type Number	Noise Figure [dB]		Associated Gain [dB]		Frequency [GHz]	Drain-Source Voltage [V]	Drain Current [mA]	Package Outline
	Typ.	Max.	Min.	Typ.				
MGF4921AM*	0.35	0.55	11.5	13.0	4	2	10	GD-30
MGF4934CM	0.50	0.75	11.5	13.0	12	2	10	GD-30
MGF4935AM	0.45	0.65	11.0	12.0	12	2	10	GD-30
MGF4937AM	0.35	0.50	11.5	13.0	12	2	10	GD-30
MGF4941AL	0.35	0.50	12.0	13.5	12	2	10	GD-32
MGF4964BL	0.65	0.90	11.5	13.5	20	2	10	GD-32
MGF4965BM	0.95	1.25	9.5	11.5	20	2	10	GD-30
MGF4941CL*	2.40	3.80	7.5	10.0	24	1.5	Idss	GD-32

Ta=25°C ■: AEC-Q101 qualified



GaAs HEMT/MES FET, InGaP HBT SERIES FOR SMALL SIGNAL AMPLIFIERS (Discrete)

Type Number	Output Power at 1dB Gain Compression [dBm]		Output Power [dBm]	Linear Power Gain [dB]	3rd Order IM Distortion [dBc]		Power Added Efficiency [%]	Frequency [GHz]	Drain-Source Voltage [V]	Drain Current [A]	Thermal Resistance [°C/W]		Package Outline
	Min.	Typ.			Min.	Typ.					Typ.	Max.	
MGF1941AL	11.0	15.0	—	10.0	—	—	—	12	3	0.03	—	—	GD-32
MGF4841AL	11.5	14.5	—	12.0	—	—	—	12	2.5	0.025	—	—	GD-32
MGF4841CL*	—	11.5	—	8.5	—	—	—	24	1.5	Idss	—	—	GD-32
MGF3022AM*	14.0	16.5	—	18.0	—	—	—	2.4	3	0.033	—	—	GD-30

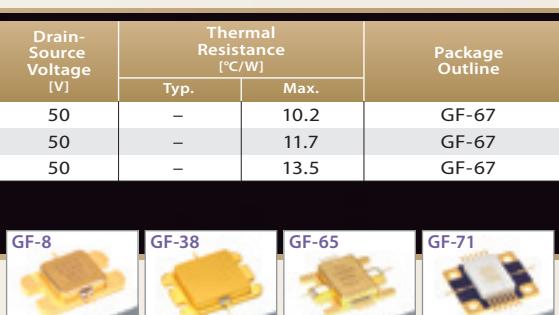
Ta=25°C ■: AEC-Q101 qualified



GaN HEMT SERIES FOR MOBILE COMMUNICATION BASE TRANSCEIVER STATION

Type Number	Output Power [dBm]	Linear Power Gain [dB]	Power Added Efficiency [%]	Frequency [GHz]	Drain-Source Voltage [V]	Thermal Resistance [°C/W]		Package Outline
						Typ.	Max.	
MGFS39G38L2	39	20	67	3.4~3.8	50	—	10.2	GF-67
MGFS38G38L2**	38	20	67	3.4~3.8	50	—	11.7	GF-67
MGFS37G38L2**	37	20	67	3.4~3.8	50	—	13.5	GF-67

Ta=25°C ★: Under Development



GaN HEMT SERIES FOR SATELLITE COMMUNICATION (Internally Matched)

Type Number	Output Power [dBm]	Linear Power Gain [dB]	3rd Order IM Distortion [dBc]		Power Added Efficiency [%]	Frequency [GHz]	Drain-Source Voltage [V]	Drain Current [A]	Thermal Resistance [°C/W]		Package Outline
			Min.	Typ.					Typ.	Max.	
MGFK50G3745**	50	10	-25	—	30	13.75~14.5	24	2.4	T.B.D.	T.B.D.	GF-38
MGFK49G3745	49	7.5	-25	—	28	13.75~14.5	24	2.1	0.4	0.6	GF-38
MGFK48G3745*	48.3	9.3	-25	—	33	13.75~14.5	24	1.44	0.8	1.0	GF-8
MGFK47G3745A	47	9	-25	—	30	13.75~14.5	24	1.05	1.1	1.4	GF-8
MGFG5H1503	43	20	-25	—	18	13.75~14.5	24	2.7	1.2	1.5	GF-65
MGFG5H3001*	39	15	-25	—	12	27.5~31	24	1.5	2.0	T.B.D.	GF-71

Ta=25°C ★: New Product **: Under Development

TYPE NAME DEFINITION OF HIGH FREQUENCY DEVICES

Discrete

MGF 4 9 4 1 A L

A B C D

A Device Structure — 1x: MES FET (Small Signal)
3x: HBT
4x: HEMT

B Chip Type
C Series Number
D Auxiliary Symbol

For Mobile Communication Base Transceiver Station

MGF S 3 9 G 3 8 L 2

A B C D E F

A Freq. Band — S
B Output Power in dBm — ex. 39 = 39dBm
C Device Structure — G: GaN HEMT
D Freq. Band in GHz — ex. 38 = ~3.8GHz
E Package — L: QFN
F Input / Output Pair — ex. 2 = Input / Output 2 Pairs

For Satellite Communication (Internally Matched)

MGF K 5 0 G 3 7 4 5

A B C D

A Freq. Band — Ku
B Output Power in dBm — ex. 50 = 50dBm = 100W (typ.)
C Device Structure — G: GaN HEMT
D Freq. Band in GHz — ex. 3745 = 13.75~14.5GHz

High Frequency devices are compliant with the RoHS (2011/65/EU).

Please visit our website for further details.

www.MitsubishiElectric.com

Keep safety first in your circuit designs!

- Mitsubishi Electric Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of non-flammable material or (iii) prevention against any malfunction or mishap.

Notes regarding these materials

- These materials are intended as a reference to assist our customers in the selection of the Mitsubishi semiconductor product best suited to the customer's application; they do not convey any license under any intellectual property rights, or any other rights, belonging to Mitsubishi Electric Corporation or a third party.
- Mitsubishi Electric Corporation assumes no responsibility for any damage, or infringement of any third-party's rights, originating in the use of any product data, diagrams, charts, programs, algorithms, or circuit application examples contained in these materials.
- All information contained in these materials, including product data, diagrams, charts, programs and algorithms represents information on products at the time of publication of these materials, and are subject to change by Mitsubishi Electric Corporation without notice due to product improvements or other reasons. It is therefore recommended that customers contact Mitsubishi Electric Corporation or an authorized Mitsubishi Semiconductor product distributor for the latest product information before purchasing a product listed herein.

The information described here may contain technical inaccuracies or typographical errors. Mitsubishi Electric Corporation assumes no responsibility for any damage, liability, or other loss rising from these inaccuracies or errors. Please also pay attention to information published by Mitsubishi Electric Corporation by various means, including the Mitsubishi Semiconductor home page (<http://www.MitsubishiElectric.com>).

- When using any or all of the information contained in these materials, including product data, diagrams, charts, programs, and algorithms, please be sure to evaluate all information as a total system before making a final decision on the applicability of the information and products. Mitsubishi Electric Corporation assumes no responsibility for any damage, liability or other loss resulting from the information contained herein.
- Mitsubishi Electric Corporation semiconductors are not designed or manufactured for use in a device or system that is used under circumstances in which human life is potentially at stake. Please contact Mitsubishi Electric Corporation or an authorized Mitsubishi Semiconductor product distributor when considering the use of a product contained herein for any specific purposes, such as apparatus or systems for transportation, vehicular, medical, aerospace, nuclear, or undersea repeater use.
- The prior written approval of Mitsubishi Electric Corporation is necessary to reprint or reproduce in whole or in part these materials.
- If these products or technologies are subject to the Japanese export control restrictions, they must be exported under a license from the Japanese government and cannot be imported into a country other than the approved destination.
- Any diversion or reexport contrary to the export control laws and regulations of Japan and/or the country of destination is prohibited.
- Please contact Mitsubishi Electric Corporation or an authorized Mitsubishi Semiconductor product distributor for further details on these materials or the products contained therein.



for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.



MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
www.MitsubishiElectric.com

New publication effective Sep. 2017.
Specifications subject to change without notice.

©2017 Mitsubishi Electric Corporation